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Reply to Office action of May 9, 2006

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### REMARKS

Applicant respectfully requests entry of this Amendment and reconsideration of the pending claims. Claims 1-20 are currently pending.

The specification is amended to remove the indicated reference numbers that were objected to in the Office Action.

Claims 1-8, 10, 20 were rejected under 35 USC § 103 as being unpatentable over Miller in view of a plurality of references. Applicant notes that claim 1 defines "a cylindrical support rod having a central portion, said central portion having a surface roughness of from about 0.1 micron to about 4 microns, wherein said central portion has an ovality of up to about 0.5 mm and a bow of up to about 0.7 mm/m along a longitudinal axis of said support rod assembly". That is, the support rod has the characteristics of surface roughness, bow, and ovality.

Miller does not disclose, teach or suggest a support rod as claimed. The mandrel disclosed in Miller is not a support rod as claimed. Miller is relied upon in the Office Action to disclose the support rod, and yet fails to do so. The Office Action states "...a support rod with the claim characteristics were not specifically presented..." Applicant agrees, and adds that no support rod at all was disclosed in Miller with or without the claim characteristics.

The Office Action asserts that it would be obvious to expect the same characteristics on the support rod that contacts the quartz tube that the prior art teaches are characteristics of the quartz tube itself. This is because that contact supposedly would impart the claimed characteristics from the support rod to the quartz tube. (Office Action, page 10). There is utterly no justification for that statement. During operation, the quartz tube is so hot that it flows and sags and can be drawn into fibers. The Office Action would have a characteristic of a work piece that becomes fluid anticipate and obviate a property, such as a surface finish, on a structurally and functionally dissimilar part. This is improper and fails to meet the burden of showing the claim elements in one or more references from the prior art.

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Without the Miller mandrel being the Office Action substitute for the claimed support rod element, a *prima facie* case of obviousness is not made. That the mandrel is removed before operation demonstrates beyond doubt that it is not, cannot, be present as a support rod during use as defined.

If the Miller mandrel is "necessary for supporting the central sections of the quartz tube" (Office Action, page 11) as asserted in the Office Action, then the absence of the Miller Mandrel *when the glass is hot, flowing and sagging during use* would make the modification suggested by the Office Action inoperable. In Miller, the soot tube may be used as the substrate, but not the Mandrel. Miller discloses "After the soot cylinder 11 has been consolidated to form a solid glass tube, the mandrel 12 is removed and the [soot] tube is used as a substrate." The Miller mandrel forms the soot cylinder, and does not act as a support rod as claimed. The mandrel is removed during processing and is entirely absent and unable to have or perform the function of a support rod as claimed. Particularly, the mandrel cannot "straightens and supports said quartz tube and prevents tapering of said inner diameter due to creep" as defined in claim 1. The Office Action does not address whether the soot tube satisfies the support rod element, and the Applicant declines to speculate at this point but expects that it does not.

A consistent mistake in the previous Office Actions has been that the claimed properties, characteristics and functions of parts of the claimed invention are drawn from prior art reference parts that bear little or no resemblance to the inventive parts. An example is the failure to articulate the difference between an article and a work piece with which the article is associated. More specific mistakes are discussed below.

In view of Monberg, the Office Action appears to characterize a bow element of the object being worked on (the sintered quartz tube), that is a structurally dissimilar element, as disclosing the same element with regard to the claimed support rod. Clearly, the claimed support rod is not the disclosed quartz tube of Monberg. Any bow measurement of the quartz tube does not disclose, teach or suggest a bow of a support rod as claimed. A point of fact is that there is not even an assertion in the Office Action that the quartz tube is in continuous contact with the support rod such that the bow of one would mirror the bow of the other. Without even referencing the claimed support rod, if

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any support rod held only opposing ends of a work piece (like a chair leg on a wood lathe) the work piece could have any profile independent of the tool holding it.

Ovality requires the Office Action to add another reference. There is no stated relationship between the bow element and ovality element in any of the references. The addition of Lum attempts to address ovality, but again the ovality disclosed is for the quartz tube, and not for the support rod as claimed. It makes no difference whether "up to" includes circular or ovality of zero. For anticipation or for *prima facie* case of obviousness, there needs to be shown all of the claim elements before a meaningful discussion can occur. Here, no support rod as claimed is shown, and that there is a quartz tube of any profile is not sufficient to form a *prima facie* case of obviousness as a claim element is still missing.

Yokokawa is added to the mix of disclosures to supply the missing surface roughness element. The Office Action admits "Yokokawa discloses a cylindrical quartz tube." A flaw is pointed out in the Office Action, which states that Yokokawa discloses the surface roughness for a different element (the quartz tube) and not for the support rod as claimed. Accordingly, the element of surface roughness for the support rod has not been shown in the art reference relied on to supply that claim element. No *prima facie* case of obviousness has been made.

O'Brien is not relied on to cure any of the deficiencies discussed hereinabove. Rather, O'Brien is presented to disclose a graphite mandrel. The corresponding claim (claim 3) depends from allowable claim 1, and is allowable for at least the reasons that claim 1 is allowable.

Kyoto is not relied on to cure any of the deficiencies discussed hereinabove. Rather, Kyoto is presented to disclose an inert environment and/or inert material. The corresponding claim (claim 20) depends from allowable claim 1, and is allowable for at least the reasons that claim 1 is allowable.

Because of the foregoing, at least the support rod has not been demonstrated in the prior art, either in individual references or in the combination of references provided. Particularly, the attributes and characteristics associated with the quartz tube work pieces disclosed in the art references do not disclose, teach, or reasonably suggest at least the

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support rod as defined in claim 1, and all the claims that depend thereon. Applicant respectfully requests that a notice of allowability be issued for the pending claims.

Claims 9-12, and 19 were rejected under 35 USC § 103 as unpatentable over Miller in view of Monberg and the other art references discussed and cited hereinabove with reference to claim 1. Claims 9-12 and 19 are currently pending, all of which depend from allowable claim 1. Further, and as noted hereinabove, the Office Action does not clarify how the mandrel of Miller anticipates or obviates the support rod, or assembly, as claimed.

Claim 13 was rejected under 35 USC § 103 as unpatentable over Miller in view of Monberg and the other art references discussed and cited hereinabove with reference to claim 1, and further in view of Rupert and Baniel. Only claim 13 is pending, and claim 13 depends from allowable claim 1. While a patchwork quilt of references may be combined, as correctly suggested in the Office Action, the assertion that the combination would be useful for addressing bubble formation and perfection of fit does not address why the particular references would be so combined. For a *prima facie* case of obviousness the reason for the particular selection of elements, and a statement as to the reasonableness of success is needed. Here, the only thing to go on is the Applicant's specification outlining the benefit of the combination.

Claims 14-15 were rejected under 35 USC § 103 as unpatentable over Miller in view of Monberg and the other art references discussed and cited hereinabove with reference to claim 1, and further in view of Rupert. Claims 14-15 are pending and depend from allowable claim 1. The Office Action relies on Rupert to "disclose a coupling in the retaining portion or a second retaining portion" that Miller fails to disclose. Rupert is also relied on as it "teaches of another support structure used in the sintering of a hollow soot cylinder or a quartz tube."

The motivation of using the retaining portions of Rupert to solve a problem associated Miller implies that Miller, by itself, would have the problem of deformation and sagging during use. That implies further that the mandrel of Miller is not present, or not capable, during use to prevent these actions. Accordingly, the Miller mandrel is not, as mistakenly suggested, anticipating the claimed support rod.

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Additionally, it is not clear how the retaining portions would interact with the quartz tube in the presence of a mandrel. Unfettered access to contact the quartz tube can only be obtained if there are no other contacting portions. Here, the modification requires both the retaining portions and the mandrel to be in contact with the quartz tube, but provides no advice as to how, or if, this is physically possible. That each of the retaining portions and the mandrel can separately contact the quartz tube does not imply that they can together successfully contact the quartz tube.

Claims 16-18 were rejected under 35 USC § 103 as unpatentable over Miller in view of Monberg and the other art references discussed and cited hereinabove with reference to claim 1, and further in view of Lane. Claims 16-18 are currently pending, and depend from allowable claim 1.

Because of the foregoing, the claimed invention has not been disclosed, taught or suggested, either in individual references or in the combination of references provided. Applicant respectfully requests that a notice of allowability be issued for the pending claims.

The Office Action comments generally on several points. As noted above, a telling point is the statement that "a support rod with the claimed characteristics were not specifically presented." The stark contrast between what is claimed and what the cited art teaches is supposedly reconciled by the statement, made without support, that "the support rod of Miller is in contact with the quartz tube to be sintered, and in order to impart the claimed characteristics that the prior art teaches on the sintered quartz tube, it would be obvious to expect the same characteristics on the support rod contacting the quartz tube." While the Applicant appreciates the honest assessment of the deficiencies of the cited art, to be "obvious" several burdens must be satisfied, and here none were. Discussed at various places herein, Miller discloses a removable mandrel and not a support rod; the nature of the contact of the mandrel to tube was not even asserted to be such that the mandrel contacts the tube where the supposed claim characteristics reside; no mechanism is asserted that begins to describe the transfer of characteristics from one structurally and functionally different part to another; and, with regard to "obvious" modification there is conflicting motivation to modify (at best), no correspondingly similar elements, and no articulable reasonable expectation of success if one of ordinary

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skill in the art were to combine all of these features in one apparatus that the apparatus could work or would produce the effect asserted in the Office Action.

There is no *prima facie* case of obviousness made. The pending claims are allowable over the cited art. Notice to that effect is respectfully requested. At a minimum, Applicant requests entry of the amendment to the specification to put the case in condition for an Appeal in accordance with 37 CFR § 1.114. There are no amendments to the claims that would create an undue search burden to preclude entry of this amendment.

Should the Examiner believe that anything further is needed, the Examiner is invited to contact the Applicant's undersigned representative at the telephone number below. Any additional fees for the accompanying response are hereby petitioned for, and the Director is authorized to charge such fees as may be required to Deposit Account 07-0868.

Respectfully submitted,



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